University of Southern Queensland

The working relationship between horse and rider during training and competition for equestrian sports

A dissertation submitted by

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Certification of Dissertation

I certify that the ideas, experimental work, results, analyses and conclusions reported in this dissertation are entirely my own effort, except where otherwise acknowledged. I also certify that the work is original and has not been previously submitted for any other award, except where otherwise acknowledged.

Signature of Candidate Date

Endorsement

Signature of supervisor Date

The Horse

Where in this wide world can man find nobility without pride,

Friendship without envy, or beauty without vanity.

Here, where grace is served with muscle and strength by gentleness confined

He serves without servility; he has fought without enmity.

There is nothing so powerful, nothing less violent.

There is nothing so quick, nothing more patient.

Our past has been borne on his back.

All our history is in his industry.

We are his heirs, he our inheritance.

Duncun (1954)

Publications

Bridgeman, D. J., & Pretty, G. M. (2005). *Exploring heart rate as an indicator of synchronisation between dressage horse and rider at training and competition.* Paper presented at the ISSP 11th World Congress of Sport Psychology, Sydney, Australia.

Pretty, G. M., & **Bridgeman, D. J.** (2005). Of two minds: Consulting with the horse-and-rider team in dressage, showjumping and polo. In J. Dosil (Ed.), *The Sport Psychologist's Handbook* (pp. 569 - 585). Chichester, West Sussex: John Wiley.

Bridgeman, D. J., Pretty, G. M. & Tribe. A. (2006). *Heart rate synchronisation of dressage horse and rider during the warm up period for a competition dressage test.* Paper presented at the Australian Equine Science Symposium, Surfers Paradise, Australia.

Abstract

The working relationship between horses and riders is a unique association requiring cooperation between both to achieve the goals of humans in their selected equestrian sport. This dissertation chose the equestrian sports of eventing and dressage to investigate this working relationship between horse and rider, and its stability across training and competition settings. Consideration was given to psychological, physiological and behavioural factors for the human and horse. The research required the development of a measure to indicate the harmony of the working relationship, which resulted in a rider and observer inventory, and of a physiological indicator of the relationship which became the correlation between the horse and rider heart rate and was called heart rate synchronisation. To examine reactive behavioural factors of the horse a horse Behaviour Check List was created, and to consider possible psychological factors implicated in this behaviour a Horse Temperament Inventory was developed. Anxiety was the psychological factor chosen to assess the rider, and the Competitive State Anxiety Inventory – 2 and the Emotion and Mood Components of Anxiety – Questionnaire were used as its different components.

It was hypothesized that there would be significant environmental differences between most factors with the competition environment showing evidence of lower working relationship scores, higher heart rates, higher rider anxiety, and more reactive horse behaviours. Horse temperament was considered to be a trait and therefore no differences were predicted. Negative relationships were hypothesized between the working relationship measures and rider anxiety components, horse temperament and critical horse behaviours. A positive relationship was hypothesized between rider self confidence and the working relationship. Negative relationships were also predicted between rider anxiety, horse temperament and horse behaviour. No specific predictions

were made regarding relationships between rider and horse heart rates and the other factors.

In Study 1 with five eventing teams, results from Cohen's *d* analyses of differences between means supported some hypotheses. A moderate to large effect size was found for rider's somatic anxiety and heart rate being higher in the competition environment, but no significant effects were found for the rider's cognitive anxiety and levels of self-confidence across environments. However, contrary to hypotheses, working relationship and the heart rate synchronisation factors had higher scores in the competition environment and showed a small and large effect size respectively. The horse's temperament was also more positive in the competition environment, with the Horse Temperament Inventory – Rider (HTI-R) revealing a small effect size and the Horse Temperament Inventory – Observer (HTI-O) without the rider a large effect size, suggesting that it seems to be identifying a psychological state of the horse rather than the hypothesized temperament traits. The hypothesis regarding the horse and rider's heart rate was also accepted as they also increased in the competition environment. The horse's maximum heart rate and minimum heart rate showed a moderate effect size and a large effect size was found in the differences of the horse's mean heart rate. The rider's maximum heart rate and mean heart rate data also showed a large effect size and the rider's minimum heart rate means showed a moderate effect size. Due to unforeseen circumstances and the low number of participants, the hypotheses could not be evaluated using inferential statistics. However, the patterns of the findings led to some modifications of methods and the selection of another equestrian sport for Study 2.

The findings from Study 2 with thirty dressage teams indicate the working relationship between horse and rider was stable across environments during a dressage test. The heart rate synchronisation analysis was able to identify significant

relationships between most horse and rider teams during a dressage test in both the training and competition environments. At a group level the correlation between the horse and rider heart rates displayed a significant positive relationship in the training environment, but not in the competition environment. A t-test analysis found stability of the horse's temperament across environments, suggesting that the Horse Temperament Inventory is measuring temperament traits. Also the rider's somatic anxiety showed a significant increase in the competition environment, which was also reflected in the rider's emotional experience of this anxiety. Unexpectedly the rider's self-confidence was also significantly higher in the competition environment. However, no predicted associations were found between working relationship scores and heart rate synchronisation, or between these measures and horse and rider factors.

The relationship between reactive horse misbehaviours and rider anxiety, and the team's working relationship was analysed. A significant association was found between each of the rider's and judge's ratings of the working relationship and heart rate synchronisation with the horse's misbehaviour scores in the competition environment. The rider's somatic anxiety also showed a significant association with the horse's misbehaviour in both the training and competition environments. Significant relationships were also found between horse misbehaviour and performance in both training and competition environments. To extend this investigation further a discriminant function analysis was conducted to determine if the riders with levels of high and low cognitive and somatic anxiety could be categorised on the basis of horse temperament. It revealed that riders with high and low levels of somatic anxiety could be categorised on the basis of the horse's temperament score, whereas riders with high and low levels of cognitive anxiety could be classified on the basis of the horse's heart rate means in the competition environment.

Overall, the dissertation has significant methodological, conceptual and practical outcomes. It demonstrates possible self report, observational and physiological indicators to assess the horse-rider working relationship, and a reliable measure of horse temperament. It also addresses several speculations, assumptions and anecdotal references in the literature about the interactive association between horse and rider. Findings here point to significant associations between horse and rider psychology and physiology, and patterns of relationships that may indicate some relevance to the working relationship, and ultimately performance.

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Preface

A life amongst horses drives a desire to comprehend how we have this extraordinary working relationship with nature's most noble creature.

Horsemanship skills have been passed traditionally by word of mouth from one horse trainer to the next. Thus, a lot of knowledge and skill has been lost with the passing of these horsemen as little documentation exists of their expertise. Indeed, much of the literature that does exist regarding the working relationship between horse and rider is derived from a few anecdotal sources. These originate from historical accounts which also reflect superstition and cultural traditions of horsemen from around the world. These horsemen used many different training strategies and techniques which are based on as many varied philosophies. The horse-rider partnership is considered to be very emotive, and conjecture regarding this working relationship is that it is within the domain of a sacred attachment (Keaveney, 2008).

To a person who regularly trains horses this absence of evidence-based understanding of the equine-human working relationship is frustrating. Equestrian sport demands horse and rider work together to succeed. Thus, the evaluation and understanding of both horse and rider behaviour as it occurs interactively is required to determine factors that promote good teamwork and performance during competition.

To consider both horse and rider factors in the one study requires the researcher to cross the boundaries of several scientific disciplines; animal behaviour, comparative psychology, human and animal physiology, and sport and exercise psychology. There are many challenges in integrating terminologies, conceptual frameworks and methodological traditions of such diverse fields, which often disagree with each other. For example, in reviewing the literature for animal behaviour, some researchers examine and describe animal behaviour without attribution of complex

cognitive, emotive or social processes (Tribe, 1998). However, there is another perspective taken by other researchers who consider animal behaviour to be associated with cognitive and emotional processes such as problem solving, attitudes and mood (Fraser & Broom, 1990).

The literature and research informing this dissertation and reviewed in Chapter One integrates both perspectives. The author does not set out to critique or take a position on these two perspectives as part of the rationale for the dissertation or its design.

This dissertation draws together theories and methods that span the scientific disciplines of horse and human behaviour, physiology and psychology. It is recognised that each discipline has different traditions in its organisation and presentation of literature reviews, methods data, and findings. This dissertation was developed and supervised within a Department of Psychology, and hence the tradition in which it is written is within the discipline of psychology and complies with the American Psychology Association (APA 5th edition) format.

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